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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
KRONENTHAL, CRAIG W	

ART UNIT	PAPER NUMBER
2623	

DATE MAILED: 12/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/974,707	WUSTEFELD ET AL.	
	Examiner	Art Unit	
	Craig W Kronenthal	2623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,6,7,10,11,13,18,21 and 22* is/are rejected.

7)☒ Claim(s) *4,5,8,9,12,14-17,19 and 20* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *09 October 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *10/9/01*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to because the flow diagrams in Figures 1 and 2 do not contain text indicating the appropriate names or functionality. Each object of the flow diagram that is given a reference number should contain text. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 7, 10, 11, and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Nagasaka et al. (PN 6,157,744). (hereinafter Nagasaka)

Regarding Claims 1 and 18: Nagasaka discloses a method for the detection of an object moving in the monitored region of a camera, wherein

- An actual image of the monitored region is recorded by the camera (Fig. 1, 11) (col. 4 lines 8-9). The interface (Fig. 1, 8) which enters digital image data may be a camera.
- At least one actual measured value is derived from the actually recorded image which provides information on differences between at least two different image regions and which is invariant with respect to image displacements, image rotations and/or image size changes (col. 4 lines 34-39). The actual measured value in Nagasaka is represented by the data of a color histogram. The color histogram provides information on color differences between multiple regions of an image. Each object in an image is represented by a plurality of pixels with similar color values. Peaks on a color histogram show differences between

objects and their background. Also color histograms are invariant with respect to image displacements and image rotations.

- This actual measured value is compared with a corresponding reference value derived from a stored reference image recorded by the camera (col. 4 lines 50-53). The CPU (Fig. 1, 7) calculates the difference between a color histogram representing a current frame and the color histogram of a previous or reference frame.
- An object recognition reaction is triggered on a pre-set deviation of the actual measured value from the reference value (col. 8 lines 40-44). The step 614 (Fig. 6) is triggered by step 612 (Fig. 6) when a threshold is exceeded. The object recognition reaction produced by step 614 is not specified, as it could be programmed to be a number of desired results.

Regarding Claim 7: Nagasaka discloses a method in accordance with claim 1, characterized in that a reaction is triggered when the comparison of the actual measured value with the reference value provides a comparison value which lies outside a pre-set tolerance range (col. 8 lines 40-44). The reaction done by step 614 is triggered by step 612 which compares the differences between the actual color histogram and a reference color histogram and determines if this difference is above a predetermined threshold.

Regarding Claim 10: Nagasaka discloses a method in accordance with claim 1, characterized in that a plurality of actual measured values of the same or of a different type is derived from the actual image information or structure information and is compared with corresponding stored reference values derived from the image information or the structure information of the reference image (col. 4 lines 34-39). The actual measured values in Nagasaka are contained in a color histogram. The color histogram shows the frequency of each color in the image. The color histogram provides information on color differences between multiple regions of an image. Each object in an image is represented by a plurality of pixels with similar color values. Peaks on a color histogram show differences between objects and their background. The CPU (Fig. 1, 7) calculates the difference between a color histogram representing a current frame and the color histogram of a previous or reference frame.

Regarding Claim 11: Nagasaka discloses a method in accordance with claim 1, characterized in that the measured value(s) or reference value(s) include the following information:

- Color difference between two different image regions or structure regions or between a reference point and an image region or a structure region (col. 4 lines 34-39). The actual measured value in Nagasaka is represented by the data of a color histogram. The color histogram provides information on color differences between multiple regions of an image. Each object in an image is represented

by a plurality of pixels with similar color values. Peaks on a color histogram show differences between objects and their background.

4. Claims 1 and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Kawabata et al. (PN 4,783,833). (hereinafter Kawabata)

Kawabata also discloses a method for the detection of an object moving in the monitored region of a camera, wherein

- An actual image of the monitored region is recorded by the camera (Fig. 1, 101) (col. 2 lines 50-57). The image pick-up element (101) may be a camera.
- At least one actual measured value is derived from the actually recorded image which provides information on differences between at least two different image regions and which is invariant with respect to image displacements, image rotations and/or image size changes (col. 3 lines 4-6). The actual measured values in Kawabata are the points of the edge enhancement produced by the feature extracting unit (Fig. 1, 103). The edge enhancement provides information on distance differences between multiple regions of an image. For instance, in figure 2, edge enhancement (201) shows the distance the outline of the person is from the outline of the house. Also edge enhancement images are invariant with respect to image displacements and image rotations.
- This actual measured value is compared with a corresponding reference value derived from a stored reference image recorded by the camera (col. 5 lines 16-

25). The comparison and background edge image renewal unit (Fig. 1, 107) calculates the difference between an input edge enhancement image and a background edge enhancement image.

- An object recognition reaction is triggered on a pre-set deviation of the actual measured value from the reference value (col. 5 lines 56-59). The reaction is the outputting of a signal 1j (Fig. 1) after thresholding with a pre-set deviation, T (col. 5 lines 43-45).

Regarding Claim 6: Kawabata discloses a method in accordance with claim 1, characterized in that an image of an object-free monitored region is used as the reference image (Fig. 2, 204-206) (col. 3 lines 65-66). The reference images (204-206) show just the house without the corresponding objects in motion, namely the person, cat, and bird as shown in the input images (201-203).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 2, 3, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagasaka et al. in view of Kawachi et al (PN 6,285,787). (hereinafter Kawachi)

Regarding Claim 2: Nagasaka discloses the method in accordance with claim 1, but does not disclose the use of a structure. Kawachi discloses an image processing method, characterized in that a structure (slit plate, Fig. 2, 27), which is a component of the image, is superimposed (col. 4 lines 41-43) on the reference image and the actually recorded image (col. 6 lines 16-22); and in that the reference value and a measured value are gained from the corresponding structure information (col. 6 line 65 – col. 7 line 3). The slit plate (27) is placed in front of a light source (Fig. 1, 25) causing structures to be projected or superimposed on a field of view (measurement surface, Fig. 1, 11). A reference image (model image) is captured with the projected structure (27), as is an input image when an object (Fig. 1, 1) appears (col. 6 lines 46-48). The structure (27) changes the gray values of each image in those regions in which it is superimposed. The resulting image data are then used as shading data for comparison. It would be obvious to one of ordinary skill in the art to modify Nagasaka with the teachings of Kawachi because both references teach the monitoring of a region of interest. Furthermore, one would be motivated to use projected structures with Nagasaka's method to focus the images and judge whether the image is good. This would help minimize erroneous detection resulting from instantaneous disturbances as is desired by Nagasaka.

Regarding Claims 3 and 21: Nagasaka as modified by Kawachi discloses the method in accordance with claim 2. Furthermore Kawachi discloses that the structure (slit plate, Fig. 2, 27) in the monitored region (measurement surface, Fig. 1, 11) is generated during the recording of the reference image and of the actual images of the monitored region by means of a projection device and/or by means of a moved light beam (col. 4 lines 41-43). The projection device is the combination of the light source (Fig. 1, 25) and the slit plate (27).

7. Claims 13 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawabata in view of Katayama et al. (PN 6,640,004). (hereinafter Katayama)

Regarding Claims 13 and 22: Kawabata discloses a method in accordance with claim 1, but does not disclose the luminating of its monitored region. However Katayama does disclose an image sensing apparatus and process characterized in that the monitored region is illuminated by means of at least one light source (illumination unit, Fig. 2, 200) during the recording of the reference image and of the actual images of the monitored region (col. 6 lines 65-67). It would be obvious to one of ordinary skill in the art to modify Kawabata with Katayama since both references teach the comparing of input images to background images for the purpose of object detection. Furthermore, one would be motivated to make this modification to illuminate the monitored region so the camera may capture a clear image of all objects within the monitored region under

all conditions. Often object detection is utilized in areas that do not receive sufficient sunlight or artificial lighting for a video camera.

Allowable Subject Matter

8. Claims 4, 5, 8, 9, 12, 14-17, 19, and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Courtney (PN 5,969,755) is cited for teaching video surveillance and a method of automatic object detection including the use of motion segmentation.
- Crabtree et al. (PN 6,295,367) is cited for teaching video surveillance and a method for tracking a moving object in a specified viewing area utilizing region segmentation and background image generation.
- Ito et al. (PN 6,088,468) is cited for teaching video surveillance utilizing image differencing and binarization to detect an object.
- Matsuga et al. (PN 6,167,167) is cited for teaching image extraction utilizing a mask and difference imaging.

- Munno et al. ("Automatic Video Image Moving Target Detection for Wide Area Surveillance") is cited for teaching image filtering and segmentation for object detection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Craig W Kronenthal whose telephone number is (703) 305-8696. The examiner can normally be reached on 8:00 am - 5:00 pm / Mon. - Fri..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au can be reached on (703) 306-6604. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

CWK
11/05/04

MEHRDAD DASTOURI
PRIMARY EXAMINER

Mehrdad Dastouri